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EXAMINER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ALBERT KENNEDY HARRINGTON, JOHN TONY KINARD,
BRIAN JOHN MELODY, DAVID ALEXANDER WHEELER, and
DUANE EARL STENZINGER

Appeal 2008-3335
Application 10/673,816
Technology Center 1700

Decided: June 17, 2008

Before EDWARD C. KIMLIN, THOMAS A. WALTZ, and
CATHERINE Q. TIMM, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's final rejection of claims 1-15 and 19-32, which are all of the claims pending in this application. We have jurisdiction pursuant to 35 U.S.C. § 6(b).

According to Appellants, the invention is directed to a process for preparing a capacitor by forming an oxide coating on aluminum (App. Br. 2). Further details of the invention may be gleaned from illustrative independent claim 1, as reproduced below:

1. A process for preparing a capacitor comprising:

fabricating an aluminum plate;

pre-hydrating said alumin[i]um plate;

contacting said plate with an anodizing solution comprising

glycerine, about 0.1 to about 2.0%, by weight, water and
about 0.01 to about 0.5%, by weight, orthophosphate;

applying a voltage to said aluminum plate of at least about 220
volts.

The Examiner has relied on the following prior art references as
evidence of obviousness:

Ball	4,481,083	Nov. 6, 1984
Kinard	5,837,121	Nov. 17, 1998

ISSUES ON APPEAL

Claims 1-15 and 19-32 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kinard in view of Ball (Ans. 3).

Appellants contend that “Kinard et al. teaches against the water content of the claimed invention” (App. Br. 5).

Appellants contend that Kinard teaches that the desired thickness of the film can be achieved without such high voltages, and that the dielectric

properties of the oxide layer are not simply related to thickness (App. Br. 7-8; Reply Br. 7-8).

Appellants contend that using the electrolyte of Kinard would be ignoring the requirements of Ball, and that the anodizing solutions of each reference are in conflict (App. Br. 9-10).

The Examiner contends that Kinard teaches low amounts of water that are “equivalent” to the claimed lower limit (Ans. 3).

The Examiner contends that Kinard teaches that the thickness and rate of anodization of the oxide layer is proportional to the applied voltage (Ans. 4).

The Examiner contends that Ball teaches the “pre-hydrating” step to enable thicker anodized oxide layers to be formed (Ans. 4).

Accordingly, we determine the following issues are presented from the record in this appeal: (1) Have Appellants established that the Examiner reversibly erred in determining that the amount of water in the anodizing solution of Kinard is “equivalent” to the claimed lower limit; (2) Have Appellants established that the Examiner reversibly erred in determining that the thickness and rate of anodization are result-effective variables depending on the applied voltage; and (3) Have Appellants established that the Examiner reversibly erred in combining Ball with Kinard to show the obviousness of using a “pre-hydrating” step in the Kinard process?

We determine that the Examiner has properly established a prima facie case of obviousness in view of the reference evidence, which prima facie case has not been adequately rebutted by Appellants’ arguments. Therefore, for reasons stated in the Answer and below, we AFFIRM the sole ground of rejection presented for review in this appeal.

OPINION

Appellants have not presented arguments specific to any individual claim (*see* the App. Br. and Reply Br. in their entirety). Therefore, we select independent claim 1 from the grouping of claims and limit our discussion to this claim. *See* 37 C.F.R. § 41.37(c)(1)(vii).

We determine the following Factual Findings (FF) from the record in this appeal:

- (1) Kinard discloses a method of preparing an anode plate for a capacitor including the steps of fabricating an aluminum plate, contacting the plate with an anodizing solution of glycerin, less than 1000 ppm of water, and 0.1-15 wt.% of dibasic potassium phosphate, with a final step of anodizing the aluminum plate (Ans. 3; Kinard, Abstract; col. 1, ll. 7-8; col. 4, ll. 11-12 and 49-56; and col. 5, ll. 1-3 and 43;
- (2) Kinard discloses that the prior art uses water contents of more than about 2% in the anodizing solution, while establishing that solution water content and temperature are controlling parameters for the thickness of the film growth, with examples of 4000 ppm and 7000 ppm water in anodizing solutions giving rise to limiting thickness behavior (Kinard, col. 3, ll. 30-35; and col. 8, l. 65-col. 9, l. 52);
- (3) Kinard teaches that, at constant temperature, the film thickness of the oxide coating is proportional to the applied voltage and the rate of film growth is directly proportional to the current density; it is also taught that it was known in the art to control the relationships between these parameters to obtain anodic films of different

thickness (Kinard, col. 1, ll. 12-21 and 33-37; col. 3, ll. 5-6 and 35-38; col. 4, ll. 30-37 and 44-48; and col. 5, ll. 4-13 and 24);

- (4) Ball teaches that forming a hydrous oxide layer on aluminum foil prior to anodization by passing the foil into boiling deionized water was known in the art for producing desired higher voltage foil such as above about 200 volts, with the advantages of anodization above 200 volts giving power savings during anodization and a higher capacitance per given voltage (Ball, Abstract; col. 1, ll. 18-19 and 24-33);
- (5) Appellants disclose that it was known in the art to hydrate aluminum foil by passing the foil through a hot water bath before anodization, with the anode foil anodized to about 200 to 350 volts (Spec., ¶¶ [0004] and [0006]).

Under 35 U.S.C. § 103, the factual inquiry into obviousness requires a determination of: (1) the scope and content of the prior art; (2) the differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) secondary considerations, if any. *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “[A]nalysis [of whether the subject matter of a claim is obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41 (2007). If the endpoint of a range disclosed in the prior art touches or is very close to an endpoint of a claimed range, the claimed range is prima facie obvious. *See In re Geisler*, 116 F.3d 1465, 1469-70 (Fed. Cir. 1997); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 783 (Fed.

Cir. 1985). The use of the word “about” allows for values just above and below the claimed value. *See In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990). Discovery of the optimum value of a result-effective variable in a known process is ordinarily within the skill of the art. *See In re Aller*, 220 F.2d 454, 456 (CCPA 1955); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980). It is axiomatic that admitted prior art in an applicants’ specification may be used in determining the patentability of a claimed invention, and that consideration of the prior art cited by the Examiner may include consideration of the admitted prior art found in an applicants’ specification. *See In re Nomiya*, 509 F.2d 566, 570-71 (CCPA 1975); *In re Davis*, 305 F.2d 501, 503 (CCPA 1962).

Applying the preceding legal principles to the Factual Findings in this appeal, we determine that the Examiner has established a prima facie case of obviousness which has not been adequately rebutted by Appellants’ arguments. As shown by FF (1) listed above, and not disputed by Appellants (App. Br. 5), we determine that Kinard discloses fabricating an aluminum plate, contacting the plate with an anodizing solution, and applying a voltage to the plate. With regard to the amount of water in the anodizing solution of Kinard, we determine that “less than 1000 ppm” [less than 0.1 % by weight] overlaps or is very close to the claimed lower limit of “about 0.1” % by weight, when “about” is construed to include amounts slightly above and below the claimed value (*see* FF (1) and *In re Geisler*, *supra*; *Titanium Metals Corp. v. Banner*, *supra*; and *In re Woodruff*, *supra*). Additionally, we determine that one of ordinary skill in this art would have expected similar results for amounts of water just above the limit taught by Kinard, since Kinard only discloses limiting thicknesses for much higher

amounts of water such as 4000 ppm and 7000 ppm (*see* FF (2) and *Titanium Metals Corp. v. Banner, supra*). We note that there is no evidence on this record of unexpected results for the lower limit of water set forth in appealed claim 1.

With regard to the pre-hydrating step, we first determine that Appellants admit that such a step is well known in the art, with subsequent anodization at high voltages of 200 to 350 volts (*see* FF (5)). Additionally, we determine that Ball teaches the advantages of using a pre-hydrating step in aluminum foil anodization, including the use of desired higher voltages during anodization (above about 200 volts), with power savings during anodization and a higher resultant capacitance per given voltage (*see* FF (4)). Additionally, as shown by FF (3) above, we determine that optimization of the applied voltage and other parameters to achieve the desired thickness and rate of growth of the oxide film on the aluminum foil would have been *prima facie* obvious to one of ordinary skill in this art.

For the foregoing reasons and those stated in the Answer, we determine that it would have been obvious to one of ordinary skill in the art at the time of Appellants' invention to use 0.1% by weight water in the anodizing solution of Kinard, as well as a pre-hydrating step for the advantages taught by Ball, using desired higher voltages above 200 volts to achieve an optimum thickness and rate of growth of the oxide film on the aluminum foil. Appellants contend that Kinard teaches against the water content of the claimed anodizing solution (App. Br. 5). This argument is not persuasive since Kinard teaches amounts either overlapping or very close to the claimed lower limit of water, as well as teaching limiting thickness behavior only for much higher water amounts (*see* FF (1) and (2)).

Appellants contend that Kinard teaches desired thicknesses can be achieved without use of higher voltages (App. Br. 7-8; Reply Br. 7-8). This contention is not persuasive since Kinard does not teach a pre-hydrating step, and Ball as well as Appellants teach the desired use of high voltages when a pre-hydrating step has been employed in the anodization process (*see* FF (4) and (5) above). Additionally, we note that Kinard teaches optimization of the applied voltage along with other parameters to achieve the desired thickness and rate of film growth (*see* FF (3) above). Finally, Appellants contend that the anodizing solutions of Kinard and Ball are in conflict (App. Br. 10). This contention is also not persuasive since Ball is not relied upon for the composition of its anodizing solution, but Kinard teaches the same anodizing solution components as recited in claim 1 on appeal (Ans. 3-4; FF (1)).

For the foregoing reasons and those stated in the Answer, we affirm the sole ground of rejection presented for review in this appeal.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

Appeal 2008-3335
Application 10/673,816

PL initials:
sld

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